

**REMARKS**

Claims 1-31 remain pending. This response is supplemental to the amendment and response filed on February 6, 2004. Applicants are filing this supplemental response to further clarify the art accepted definition of “interval” as it pertains to a “melodic interval” and to further distinguish the claims of the instant application from the art cited by the Examiner in the Office Action dated October 6, 2003.

Rejection of claims 1-4, 9-25, and 28-31 under 35 U.S.C. §102(b)

Claims 1-4, 9-25, and 28-31 are rejected under 35 U.S.C. §102(b) for alleged anticipation by Ghias et al. (U.S. Patent No. 5,874,686). The Office Action states that the Ghias et al. reference discloses all of the elements of the claimed invention. Applicants respectfully traverse the rejection.

Claim 1 and dependent claims 2-4, 9-20, 28-31, as well as claim 23 and dependent claim 24, all include the limitation of “search criteria comprising a tune as a **sequence of melodic intervals**” (emphasis added). Claim 25 recites “an apparatus for determining a **sequence of melodic intervals**” (emphasis added). Claims 21 and 22 as amended recite “an apparatus for indexing a music database” that includes the step of “applying criteria to identify portions of the files likely to contain tunes wherein said criteria comprise a tune as a **sequence of melodic intervals**” (emphasis added). The instant specification defines “melodic intervals” at page 7, lines 13-14, as “the pitch interval between a note and a preceding note.” The term “interval” is not defined in the specification, but instead has its ordinary, art-accepted meaning, namely “the distance in pitch between two notes” or the “ratio of frequencies of the two notes” (see music dictionary definitions of interval provided as exhibits A and B).

As discussed in Applicant’s previously filed amendment and response of February 6, 2004, unlike Applicants’ invention, the Ghias et al. reference discloses a method of searching music files using *relative pitch transitions between successive notes* (col. 3, lines 8-20). Each note is given a designation as being the same pitch as the previous note (S), a higher pitch than the previous note (U), or a lower pitch than the previous note (D), thereby converting the melody

of the song into a sequence of letters using S, U, and D. Inputs are converted into this sequence of pitch changes or pitch transitions, and the songs stored in the database (in the pitch transition format) are preprocessed and converted into the same format (column 5, line 66). Once the pitch has been determined or approximated, the sequence of relative pitch transitions is compared with corresponding sequences of pitch transitions in the database.

In view of the above, as well as in view of arguments presented in Applicant's response and amendment filed on February 6, 2004, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §102(b) in view of Ghias et al. (U.S. Patent No. 5,874,686) of claims 1-4, 9-25 and 28-31.

Rejection of claims 5-7, 8, 26, and 27 under 35 U.S.C. 103(a)

Claims 5-7 are rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Ghias et al. in view of Zimmerman (U.S. Patent No. 5,563,358). Claim 8 is rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Ghias et al. in view of Lybrook et al. (U.S. Patent No. 4,731,847). Claims 26 and 27 are rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Ghias et al. Applicants respectfully traverse this rejection.

As discussed in Applicant's previous response filed on February 6, 2004, the Ghias et al. reference does not "disclose all of the elements of each of these claims" and none of the secondary references supply the deficiencies.

Zimmerman is directed to using a chromatic interval for comparing and matching pitch as part of the musical instruction of a student. The chromatic interval being calculated is relative to the pitch of the tonic, the first note of the scale (Col. 9, Line 13). Zimmerman et al. does not teach or suggest "an apparatus for searching a database of music files, comprising input means to provide search criteria comprising a tune as a sequence of melodic intervals," as required by claims 5-7 of the instant application. In particular, Zimmerman et al. does not teach or suggest an apparatus for searching a database of music files, comprising an input means that includes quantization means to determine a closest chromatic interval, a closest whole tone interval, or a closest minor or major third interval between two successive musical pitches, as required by claim 5. Zimmerman et al. also does not teach or suggest an apparatus for searching a database

of music files, comprising **comparing means** for comparing a sequence of melodic intervals, as required by claims 5-7 of the instant application (emphasis added).

As stated in Applicant's response filed on February 6, 2004, even if the Ghias et al. reference is combined with the Zimmerman et al. reference, the two disclosures do not provide the invention as claimed in claims 5-7, and even if the Ghias et al. reference is combined with the Lybrook et al. reference, the two disclosures do not provide the invention as claimed in claim 8. That is, the recited combination lacks essential elements of the claimed invention.

In view of all of the above, as well as in view of Applicant's amendment and response filed on February 6, 2003, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103 (a) rejection of claims 5-8, 26 and 27.

#### CONCLUSION

Applicants submit that all claims are allowable as written and respectfully request early favorable action by the Examiner. If the Examiner believes that a telephone conversation with Applicants' attorney would expedite prosecution of this application, the Examiner is cordially invited to call the undersigned attorney of record.

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Respectfully submitted,

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## Music Glossary

### Interval

Relational distances between two different pitches is referred to as an interval. In the diatonic scale (c-d-e-f-g-a-b-c') the distance between any two intervals is not greater than a tone and not less than a semi-tone. Depending upon the use of accidentals (sharps, flat, double sharps and double flats) interval distinctions can be described in terms of perfect, minor, major, diminished, augmented, diminished perfect or augmented perfect. Intervals are always described in terms of a lower pitch and an higher pitch. Numerically interval separations can be "named" numerically in terms of seconds, thirds, fourths, fifths, sixths, sevenths, octaves, ninths, tenths, elevenths, twelfths, and thirteenth. Fourteenths are absurd and fifteenth are simply two octaves and not in need of further redundancy. In the exemplified scale, accidentals aside, c-e is an interval of a major third, and c-a is an interval of a major sixth.



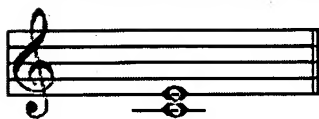
 Feedback

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# Intervals

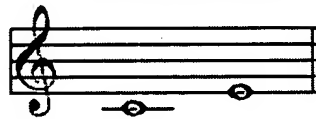


## Harmonic



sounded simultaneously

## Melodic

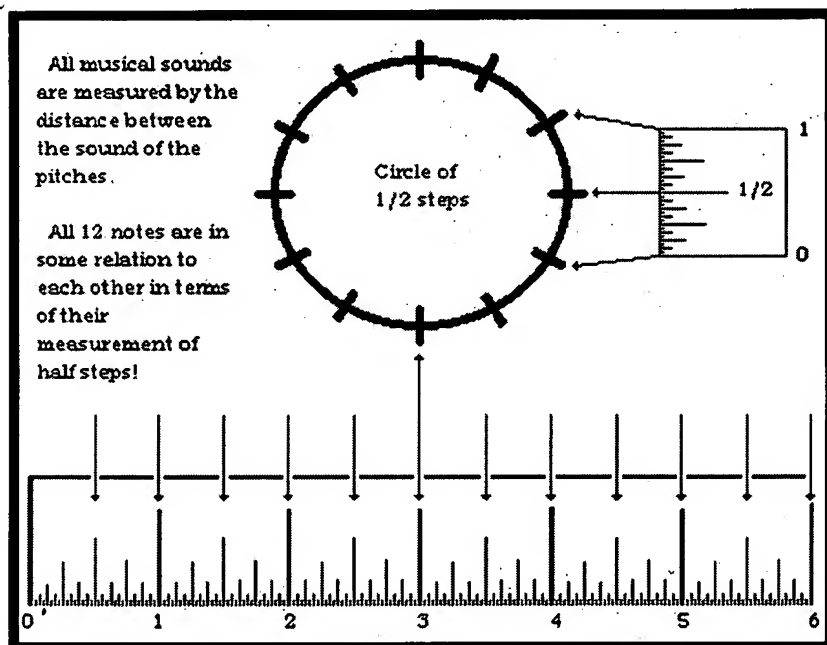


sounded successively

**An interval is the distance in pitch between one *Tone* and another.**

**Interval** = Any two pitches can be said to be in some sort of relation to one another. If those notes are played at the same time = **HARMONIC INTERVAL**. If those pitches are played one after the other = **MELODIC INTERVAL**.

Just as you can measure the distance between two things with a ruler, we can measure the distance between two notes. In music, we measure by *half steps*!



If a note was placed at zero and a note was placed above it, then we could use a regular ruler to get a measurement. For example: the distance could be one sixteenth, one eighth, one fourth, one half or one inch.

In our musical system, it is MUCH simpler than that. Our smallest unit of measurement is the *half step*.

To measure an interval, first you put the lowest note in our old friend the circle of half steps. Then you count clockwise by a half until you reach the top pitch. Make a mental note of the distance and then look it up in the list of interval names (which I will give you in a moment).

**Each different distance in half steps has a different interval name.**

If you have trouble counting by half steps, repeat after me until you can! **\*REPEAT FROM HERE\*** Zero - a half - one - one and a half - two - two and a half - three - three and a half - four - four and a half - five - five and a half - six...**\*REPEAT\***

**You MUST be able to count to six by halves.**

**Do You KNOW How To Read Your Notes?**

